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Science and Technology for Tomorrow's Aerospace Forces

Success Story

"TRAINING FOR DYNAMIC AEROSPACE CONTROL" DEMONSTRATION

The Human Effectiveness Directorate's Warfighter Training Research Division presented engineering, training, and behavioral solutions for the conduct of asymmetric coalition force operations training at the Air Force Technology Exposition 2000. The Division's "Training for Dynamic Aerospace Control" demonstrated the real-time training potential of ground-based, high fidelity training environments for command and control readiness training in a multi-site, networked environment.

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Accomplishment

Using a unique, laboratory-developed solution, directorate engineers connected the show site (Marriott Wardman, Washington, D.C.) to the directorate's Distributed Mission Training (DMT) test bed in Mesa, Arizona, over a one megabit-per-second Internet connection using encryption devices at both ends. The local area network in the Mesa test bed consisted of three additional F-16C Multi Task Trainers (MTTs) and an A-10 Unit Training Device. The engineers connected the DMT test bed with a primary rate integrated services digital network line (equivalent to a T-1, 1.5 megabit-per-second data line) to two Royal Air Force Tornado simulators, one virtual and one constructive, provided by Thomson Training and Simulation of Crawley, United Kingdom.

Other networked elements included an E-8 Joint Stars virtual simulation, a virtual Airborne Warning and Control System, E-3B Weapons Director simulator, a virtual Space Maneuvering Vehicle concept simulator, one Predator uninhabited air vehicle (UAV) MTT, joint semi-automated forces for multiple friendly (blue) and enemy (red) intelligent agent constructive forces, the Automated Threat Engagement System for multiple blue and red forces, and a Mission Control Station. During the real-time demonstration, all virtual players could see, fly with, and talk to each other.

The demonstration focused on training to accomplish the six stages of the operational chain: find, fix, track, target, engage, and assess. The directorate designed the training scenario to emulate a combined air operation event. Mission elements included suppression of enemy air defenses, offensive counter air, close tactical control for air-to-air engagements, air-to-ground strike missions, real-time reconnaissance with Joint Stars and the UAV, use of overhead space assets, and real-time re-targeting by the Combined Air Operations Center of F-16s and A-10s against Scuds and moving tank columns. The performance of the networks, the quality of the voice transmissions, and the overall validity of the training concepts were unqualified successes.

Background

The Warfighter Training Research Division conducted the demonstration using technology assets and simulation interoperability communication protocols currently in existence for distributed air and ground simulations. The demonstration also supported virtual representations of major components of the command and control infrastructure in both the United States and the United Kingdom. The Air Force Association invited the Warfighter Training Research Division to the 2000 exposition because of their outstanding performance at the 1999 Aerospace Technology Exposition and Annual Convention.

Additional information

To receive more information about this or other activities in the Air Force Research Laboratory, contact TECH CONNECT, AFRL/XPTT, (800) 203-6451 and you will be directed to the appropriate laboratory expert. (00-HE-10)

Human Effectiveness
Support to the Warfighter